AMENDMENTS TO THE CLAIMS

1. (original): A method for determining a response to administration of a chemotherapeutic or chemopreventive agent to an individual, comprising:

(a) collecting a first tissue or cell sample from the individual before exposing the individual to the chemotherapeutic or chemopreventive agent;

(b) collecting a second tissue or cell sample from the individual after exposing the individual to the chemotherapeutic or chemopreventive agent;

(c) immunohistochemically staining the first and second tissue or cell samples using a detectably-labeled antibody directed against a biological marker associated with senescence, apoptosis or terminal differentiation;

(d) measuring the optical density of the stained cells as in step (c), wherein the stained cells are illuminated with light having a wavelength absorbed by the stain;

(e) determining whether expression of the biological marker associated with senescence, apoptosis or terminal differentiation was increased following exposure to the chemotherapeutic or chemopreventive agent.

2. (original): The method of claim 1, wherein the detectable label is a chromagen or a fluoraphore.

3. (original): The method of claim 2, wherein the biological marker is p21, p27, p16, TGF-β, or SA-β-Gal.

4. (original): The method of claim 1, wherein the amount of biological marker protein is determined by ELISA assay.

5. (original): The method of claim 1, wherein optical density of the stained cells is performed by image analysis.

6. (currently amended): The method of claim 5, wherein image analysis is performed by splitting a signal comprising the optical density of the stained cells ~~biological sample~~ into a multiplicity of signals that are processed using optical filters having different absorption and transmittance properties, so that each signal is specific for one of a multiplicity of stains used to stain the cells ~~in the biological sample~~.